REMARKS

Claim 1 is amended to recite "a transparent optical element bonded to said stack by a bond at an interface disposed between said optical element and said stack, wherein said bond does not include epoxy." This amendment is supported by, for example, page 2, lines 7-22, which discuss problems with and disadvantages of placing epoxy encapsulants adjacent to the semiconductor stack, and page 10, lines 9-15, which discusses improvements of the present invention over a semiconductor stack placed in epoxy encapsulant or air.

Claims 1, 2, 8 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Goossen, U.S. Patent 5,698,452. Goossen et al. teaches at column 4, lines 11-13, "a transparent material suitable for bonding the mesas 48 to the to the photonic devices 2, such as a transparent epoxy." Epoxy is the only material Applicants can find described in Goossen for bonding the mesas 48 to the photonic devices. Since Claim 1 states the "bond does not include epoxy," Goossen does not anticipate Claim 1. Claims 2, 8, and 9 depend from Claim 1 and are therefore also not anticipated by Goossen

Claim 1, 2, 11 and 16-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Seki et al. U.S. Patent Number 5,553,089. Seki et al. teach at column 3, lines 44-49, "a convex lens 36 made of transparent epoxy resin which is a light transmissible material is attached to the first reflecting surface 34. The convex lens 36 may be formed by dropping a transparent epoxy resin on the first reflecting surface 34, immersing the first reflecting surface 34 in a transparent epoxy resin, or using a mold." Seki et al. do not discuss forming lens 36 from any material other than epoxy. Since Claim 1 states the "bond does not include epoxy," Seki et al. do not anticipate Claim 1.

Claims 2, 11, and 16-20 depend from Claim 1 and are therefore also not anticipated by Seki et al. In addition, with respect to Claim 11, Applicants can find no teaching in Seki et al. that the "optical element includes one or more luminescent materials that convert light of a

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wavelength emitted by said active region to at least another wavelength" as recited in Claim 11, thus Claim 11 is allowable over Seki et al. for this additional reason. With respect to Claims 16 and 17, Applicants can find no teaching in Seki et al. that "a refractive index of said optical element for light emitted by said active region is greater than about 1.5" as recited in Claim 16 or "greater than about 1.8" as recited in Claim 17. Seki et al. do not teach the refractive index of lens 36. Thus, Claims 16 and 17 are allowable over Seki e al. for these additional reasons. With respect to Claim 18, Applicant can find no teaching in Seki et al. that "a refractive index of said optical element is greater than or equal to a refractive index of said semiconductor layers for light emitted by said active region" as recited in Claim 18. It is well known in the art that Seki et al.'s III-arsenide layers have a much higher refractive index than Seki et al.'s epoxy lens. Thus, Claim 18 distinguishes over Seki et al. for at least this additional reason.

Claims 1, 31, and 37 are rejected under 35 U.S.C. 102(b) as being anticipated by Plaster. Claim 1 recites "a bond at an interface disposed between said optical element and said stack." As is clear from Fig. 2D, Plaster does not teach a bond between a optical element and a stack as recited in Claim 1. Fig. 2D shows a microlens 212 that simply rests on the edges of metal electrical contact area 210, and does not form a bond with the semiconductor layer stack. Accordingly, Plaster does not anticipate Claim 1. Regarding Claims 31 and 37, Applicants can find no reference in Plaster to "a transparent bonding layer disposed between said optical element and a surface of said stack" as recited in Claim 31. Plaster does not at all describe how microlens 212 attaches to the rest of the device, stating only "spherical microlens 212 is attached to the device as shown." See column 4, lines 18-19. Fig. 2D, the only figure that shows microlens 212, does not show any material between microlens 212 and the semiconductor stack. Accordingly, Claims 31 and 37 distinguish over Plaster for this additional reason.

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Claims 3 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goossen. Claims 3 and 10 depend from Claim 1. It would not have been obvious to modify Goossen to exclude epoxy from the bond between Goossen's photonic devices and NIDs because Goossen desires the low index of refraction provided by epoxy. See, for example, column 4, lines 19-20, which state "the bonding material should have a low index of refraction." It would not have been obvious to replace Goossen's epoxy bond with Applicants' bond, because Applicants' bonds provides a higher index of refraction that is undesirable to Goossen. Accordingly, Claims 3 and 10 are allowable over Goossen.

Claims 32-36, 63 and 64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Plaster. Claims 32-36, 63, and 64 are directed to a transparent bonding layer. As described above, Plaster does not even teach a bond as required by Claim 1, much less a bonding layer as required by Claim 31, and much less a transparent bonding layer. It would not have been obvious to modify Plaster to include a bonding layer, because such a layer is not necessary to Plaster's design and including such a layer would unnecessarily complicate the fabrication of Plaster's device. Accordingly, Claims 32-36, 63, and 64 distinguish over Plaster.

In view of the above arguments, Applicants respectfully request allowance of all claims. Should the Examiner have any questions, the Examiner is invited to call the undersigned at (408) 382-0480.

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ATTACHMENT A

IN THE CLAIMS

Claims are amended as follows:

1. (Amended) A light emitting device having a stack of layers including semiconductor layers comprising an active region, said device comprising:

a transparent optical element bonded to said stack by a bond at an interface disposed between said optical element and said stack, wherein said bond does not include epoxy.

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